



CONFIDENTIAL

EXHIBIT 2  
FOR "DECLARATION OF PRIOR INVENTION..."  
Application No. 09/328,626

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GROUP 3600

# The Logic Behind Auto-Rebal<sup>©</sup>

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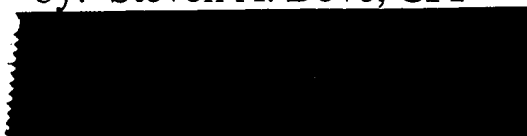


EXHIBIT 2

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## SUMMARY

This document provides the logic for the auto-rebal project (the automated process for developing investment plans). The purpose of auto-rebal is to eliminate the labor intensive aspects of generating an Investment Planning Analysis. A summary of *how* a client's asset allocation is determined is presented first, since this is the framework around auto-rebal and its functionality. That methodology is behind the preferred domain logic (steps) that will provide the foundation for auto-rebal. Initially, auto-rebal will deal *only* with repositionable and non-repositionable assets. This should allow PFP to automate 70%+ of all IPAs. *Possibly* repositionable assets will be an enhancement at a later date. While the functionality of possibly repositionable assets will not be immediately addressed from a systems standpoint, they will from an implementation standpoint. However, it is critical to the success of auto-rebal that the repositionable functionality in PlanIT be automated and that counselors have the ability on the front end to flush out these issues with clients. Finally, sample language will be provided that will be programmed to flow in the report automatically. This will enable the Investment Planning Analysis to be fully automated.

All Investment Assets will be one of the following:

1. Non-Repositionable
2. Repositionable
3. Possibly Repositionable

### Non-Repositionable Assets

- These assets will never be sold and repositioned to Vanguard funds.

### Repositionable Assets

- These assets will be liquidated and invested in Vanguard funds according to preferred domain rules.

### Possibly Repositionable Assets\*

- Are assets needed to reach target SAA?
  1. *If no, do not reposition*
  2. *If yes, reposition based on conditionality*

\* Possibly repositioned assets will be constrained by client preferences, tax costs and redemption fees. Whether or not these assets will be moved to Vanguard will be determined by the counselor. These possibly repositioned assets will be run as non-repositionable at first. If the target SAA is not met then the counselor will re-run the plan with certain assets as repositionable or because of constraints leave the assets alone. This will be the one "downside" with the first version of auto-rebal.

## DETERMINING ASSET ALLOCATION

The following steps should be followed when determining a client's strategic asset allocation. This is the first step in the auto-rebal process.

*Step 1. Total Assets* - determine the client's total investment assets. This is the total amount of assets from the "Show Current."

*Step 2. Cash Reserves* - subtract out any cash reserves that the client *cannot or will not* reposition from total assets. These are cash reserves that are included in the report, but are not being repositioned. This does not include emergency reserves that are not included in the analysis.

Note: If the client has a target Portfolio of 1 or 2, use the cash reserves that are not repositioned to meet their target cash reserves allocation.

*Step 3. Strategic Asset Allocation (SAA)* - determine the dollar amount that should be invested in stocks, bonds and cash reserves based upon the client's Ibbotson score.

*Step 4. Compare SAAs* - compare the target dollar amount of stocks, bonds and cash reserves to the client's proposed allocation. For example, a client has a \$1 million portfolio: \$800,000 in stocks (\$600,000 is non-repositionable), \$100,000 in bonds (all repositionable) and \$100,000 in cash reserves (all repositionable). The target portfolio is four, 50% stocks and 50% bonds. The proposed portfolio will be \$600,000 in stocks and \$400,000 in bonds because the client will only reposition \$200,000 of stocks.

Note: Any time a client has a current *non-repositionable* position in an asset or subasset class that exceeds the target, propose the *higher* non-repositionable amount. Then adjust the other asset or subasset classes accordingly.

*Step 5. Determine Stock Suballocation* - compute the dollar amount that you will propose for each stock *subasset* class as follows:

1. Determine the allocation to foreign stocks.
2. Subtract out foreign stocks and individual stocks from the total *proposed* stock allocation.
3. Multiply 70% times the remaining proposed allocation to stocks after subtracting out foreign and individual stocks to determine allocation to large cap stocks.
4. Multiply 30% times the remaining proposed allocation to stocks after subtracting out foreign and individual stocks to determine allocation to mid/small cap stocks.

Note: If your client has *non-repositionable* positions in a stock subasset class that exceeds the target, propose the *higher* non-repositionable amount. Then adjust the other asset or subasset classes accordingly. For example, after subtracting foreign and individual stocks, you have \$100,000 to allocate to U.S. stocks. The target would be \$70,000 large and

\$30,000 mid/small. However, the client has \$80,000 of non-repositionable large cap stocks, the proposed allocation should be \$80,000 large and \$20,000 mid/small.

*Step 6. Determine Bond Suballocation* - compute the dollar amount that you will propose for each bond *subasset* class as follows:

1. Subtract out individual bonds from the total *proposed* bond allocation.
2. Multiply the appropriate bond suballocations to the remaining bond allocation after subtracting out individual bonds to determine exposure to short-, intermediate- and long-term bonds.

Note: If your client has *non-repositionable* positions in a bond subasset class that exceeds the target, propose the *higher* non-repositionable amount. Then adjust the other asset or subasset classes accordingly. For example, after subtracting individual bonds, you have \$1,000,000 to allocate to bond funds. The target is 18% (\$360,000) short-, 27% (\$540,000) intermediate- and 5% (\$100,000) long-term bonds, based on a 50/50 portfolio. However, if the client has \$200,000 of non-repositionable long-term bonds, there is only \$800,000 to allocate between short- and intermediate-term, rather than the needed \$900,000. You would propose \$320,000 in short-term bonds (\$800,000 times 18%/45%), \$480,000 in intermediate-term bonds (\$800,000 times 27%/45%) and \$200,000 in long-term bonds.

*Step 7. Determine Cash Allocation* - The client will have a proposed cash allocation if the target portfolio is number 1 or number 2 or if there are non-repositionable cash reserves.

The above logic will provide the client's asset and sub-asset allocation dollar amounts. Once these dollar amounts are determined we can use the Preferred Domain Rules.

## **PREFERRED DOMAIN**

Before proceeding to the Preferred Domain Rules, the system will have liquidated all repositionable assets. These proceeds will have been placed in a repositionable money market on a per registration basis. For example, each registration will have a repositionable money market that purchases will be made from.

The only asset and subasset classes that will be considered (for purchases) are those where the target dollar amount is greater than the current dollar amount. If the current asset or subasset dollar amount is greater than the target, the current dollar amount will be used. Determining the proposed amounts will be a function of applying the appropriate ratios based on the target SAA.

When applying preferred domain, taxable investments are always considered first. If the client is in the 39.6% MTB or has an income need, start with the Bonds Outside Hierarchy (based on tax bracket). If the client is in the accumulation stage, or does not have an income need, start with the Stocks Outside Hierarchy. Then, follow the appropriate combination paths that are listed at the end of the hierarchy sets.

## I. Stock Outside Hierarchy

*(If Current Stock Allocation is less than the Target Stock Allocation after all repositionable assets have been liquidated and placed into a money market, continue. If not, proceed to the next step in the determined hierarchy. This logic holds true when determining whether any additional money will be added to an asset or sub-asset class).*

### A. Large Cap Stocks

#### 1. Index/Market Exposure\*

- a. If client has S&P 500 or alternate Vanguard fund, add to Vanguard S&P 500 fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard index/market exposure, open a new Vanguard S&P 500 fund, and add to it to the extent that proposed equals target.

#### 2. Growth Exposure

- a. If client has U.S. Growth or alternate Vanguard fund, add to Vanguard U.S. Growth fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard growth exposure, open a new Vanguard U.S. Growth fund, and add to it to the extent that proposed equals target.

#### 3. Value Exposure

- a. If client has Windsor II or alternate Vanguard fund, add to Vanguard Windsor II fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard value exposure, open a new Vanguard Windsor II fund, and add to it to the extent that proposed equals target.

### B. Mid/Small Cap Stocks

#### 1. Index/Market Exposure\*

- a. If client has Extended Market or alternate Vanguard fund, add to Vanguard Extended Market fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard index/market exposure, open a new Vanguard Extended Market fund, and add to it to the extent that proposed equals target.

2. Active Mid Cap Exposure

- a. If client has Horizon Aggressive Growth or alternate Vanguard fund, add to Vanguard Horizon Aggressive Growth fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard active mid cap exposure, open a new Vanguard Horizon Aggressive Growth fund, and add to it to the extent that proposed equals target.

3. Active Small Cap Exposure

- a. If client has Explorer or alternate Vanguard fund, add to Vanguard Explorer fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard active small cap exposure, open a new Vanguard Explorer fund, and add to it to the extent that proposed equals target.

*\* If A1 and B1 provide a 70/30 split, substitute TSMP*

C. International Exposure

1. International Developed\*

- a. If client has Total International Portfolio or alternate Vanguard fund, add to Vanguard Total International Portfolio fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard international developed exposure, open a new Vanguard Total International Portfolio fund, and add to it to the extent that proposed equals target.

2. International Emerging\*

- a. If client has Emerging Markets or alternate Vanguard fund, add to Vanguard Emerging Markets fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard international emerging exposure, open a new Vanguard Emerging Markets fund, and add to it to the extent that proposed equals target.

*\* If C1 and C2 provide an 80/20 split, or if there is no international exposure, use Total International*



## II. Stock Inside Hierarchy

*(If Current Stock Allocation is less than the Target Stock Allocation after all repositionable assets have been liquidated and placed into a money market, continue. If not, proceed to the next step in the determined hierarchy. This logic holds true when determining whether any additional money will be added to an asset or sub-asset class).*

### A. International Exposure

#### 1. International Developed\*

- a. If client has Total International Portfolio or alternate Vanguard fund, add to Vanguard Total International Portfolio fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard international developed exposure, open a new Vanguard Total International Portfolio fund, and add to it to the extent that proposed equals target.

#### 2. International Emerging\*

- a. If client has Emerging Markets or alternate Vanguard fund, add to Vanguard Emerging Markets fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard international emerging exposure, open a new Vanguard Emerging Markets fund, and add to it to the extent that proposed equals target.

*\* If A1 and A2 provide an 80/20 split, or if there is no international exposure, use Total International*

### B. Mid/Small Cap Stocks

#### 1. Active Small Cap Exposure

- a. If client has Explorer or alternate Vanguard fund, add to Vanguard Explorer fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard active small cap exposure, open a new Vanguard Explorer fund, and add to it to the extent that proposed equals target.

#### 2. Active Mid Cap Exposure

- a. If client has Horizon Aggressive Growth or alternate Vanguard fund, add to Vanguard Horizon Aggressive Growth fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).

- b. If client does not have any Vanguard active mid cap exposure, open a new Vanguard Horizon Aggressive Growth fund, and add to it to the extent that proposed equals target.

3. Index/Market Exposure\*

- a. If client has Extended Market or alternate Vanguard fund, add to Vanguard Extended Market fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard index/market exposure, open a new Vanguard Extended Market fund, and add to it to the extent that proposed equals target.

C. Large Cap Stocks

1. Value Exposure

- a. If client has Windsor II or alternate Vanguard fund, add to Vanguard Windsor II fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard value exposure, open a new Vanguard Windsor II fund, and add to it to the extent that proposed equals target.

2. Growth Exposure

- a. If client has U.S. Growth or alternate Vanguard fund, add to Vanguard U.S. Growth fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard growth exposure, open a new Vanguard U.S. Growth fund, and add to it to the extent that proposed equals target.

3. Index/Market Exposure\*

- a. If client has S&P 500 or alternate Vanguard fund, add to Vanguard S&P 500 fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard index/market exposure, open a new Vanguard S&P 500 fund, and add to it to the extent that proposed equals target.

*\* If B3 and C3 provide a 70/30 split, substitute TSMP*

### III. Bonds Outside Hierarchy

*(If Current Bond Allocation is less than the Target Bond Allocation after all repositionable assets have been liquidated and placed into a money market, continue. If not, proceed to the next step in the determined hierarchy. This logic holds true when determining whether any additional money will be added to an asset or sub-asset class).*

#### A. 31% MTB and Higher

##### 1. Long-Term Municipal Exposure

- a. If client has Insured Long-Term Municipal (or State specific) or alternate Vanguard fund, add to Vanguard Insured Long-Term Municipal Bond fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard long-term municipal bond exposure, open a new Vanguard Insured Long-Term Municipal Bond fund (or State specific), and add to it to the extent that proposed equals target.

##### 2. High-Yield Municipal Exposure

- a. If client has High-Yield Municipal or alternate Vanguard fund, add to Vanguard High-Yield Municipal Bond fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard high-yield municipal bond exposure, open a new Vanguard High-Yield Municipal Bond fund, and add to it to the extent that proposed equals target.

##### 3. Intermediate-Term Municipal Exposure

- a. If client has Intermediate-Term Municipal (or State specific) or alternate Vanguard fund, add to Vanguard Intermediate-Term Municipal Bond fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard intermediate-term municipal bond exposure, open a new Vanguard Intermediate-Term Municipal Bond fund, and add to it to the extent that proposed equals target.

##### 4. Short-Term Municipal Exposure

- a. If client has Limited-Term/Short-Term Municipal (or State specific) or alternate Vanguard fund, add to Vanguard Short-Term Municipal Bond fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).

- b. If client does not have any Vanguard short-term municipal bond exposure, open a new Vanguard Limited-Term/Short-Term Municipal Bond fund, and add to it to the extent that proposed equals target.

B. 28% MTB and Higher

1. Long-Term Municipal Exposure

- a. If client has Insured Long-Term Municipal (or State specific) or alternate Vanguard fund, add to Vanguard Insured Long-Term Municipal Bond fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard long-term municipal bond exposure, open a new Vanguard Insured Long-Term Municipal Bond fund (or State specific), and add to it to the extent that proposed equals target.

2. High-Yield Municipal Exposure

- a. If client has High-Yield Municipal or alternate Vanguard fund, add to Vanguard High-Yield Municipal Bond fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard high-yield municipal bond exposure, open a new Vanguard High-Yield Municipal Bond fund, and add to it to the extent that proposed equals target.

3. Intermediate-Term Municipal Exposure

- a. If client has Intermediate-Term Municipal (or State specific) or alternate Vanguard fund, add to Vanguard Intermediate-Term Municipal Bond fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard intermediate-term municipal bond exposure, open a new Vanguard Intermediate-Term Municipal Bond fund, and add to it to the extent that proposed equals target.

4. Short-Term Exposure

a. Active

- 1. If client has Short-Term Corporate or alternate Vanguard fund, add to Vanguard Short-Term Corporate Bond fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- 2. If client does not have any Vanguard short-term active bond exposure, open a new Vanguard Short-Term Corporate Bond fund, and add to it to the extent that proposed equals target.

b. Passive

1. If client has Short-Term Bond Index or alternate Vanguard fund, add to Vanguard Short-Term Bond Index fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
2. If client does not have any Vanguard short-term passive bond exposure, open a new Vanguard Short-Term Bond Index fund, and add to it to the extent that proposed equals target.

C. 15% MTB and Higher

1. Long-Term Exposure

- a. If client has Long-Term Bond Index or alternate Vanguard fund, add to Vanguard Long-Term Bond Index fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard long-term bond exposure, open a new Vanguard Long-Term Bond Index fund, and add to it to the extent that proposed equals target.

2. High-Yield Exposure

- a. If client has High-Yield Corporate or alternate Vanguard fund, add to Vanguard High-Yield Corporate Bond fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard high-yield bond exposure, open a new Vanguard High-Yield Corporate Bond fund, and add to it to the extent that proposed equals target.

3. Intermediate-Term Exposure

a. Active

1. If client has Intermediate-Term Corporate or alternate Vanguard fund, add to Vanguard Intermediate-Term Corporate Bond fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
2. If client does not have any Vanguard intermediate-term active bond exposure, open a new Vanguard Intermediate-Term Corporate fund, and add to it to the extent that proposed equals target.

b. Passive

1. If client has Intermediate-Term Bond Index or alternate Vanguard fund, add to Vanguard Intermediate-Term Bond Index fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
2. If client does not have any Vanguard intermediate-term passive bond exposure, open a new Vanguard Intermediate-Term Bond Index fund, and add to it to the extent that proposed equals target.

4. Short-Term Exposure

a. Active

1. If client has Short-Term Corporate or alternate Vanguard fund, add to Vanguard Short-Term Corporate Bond fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
2. If client does not have any Vanguard short-term active bond exposure, open a new Vanguard Short-Term Corporate Bond fund, and add to it to the extent that proposed equals target.

b. Passive

1. If client has Short-Term Bond Index or alternate Vanguard fund, add to Vanguard Short-Term Bond Index fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
2. If client does not have any Vanguard short-term passive bond exposure, open a new Vanguard Short-Term Bond Index fund, and add to it to the extent that proposed equals target.

#### IV. Bonds Inside Hierarchy

*(If Current Bond Allocation is less than the Target Bond Allocation after all repositionable assets have been liquidated and placed into a money market, continue. If not, proceed to the next step in the determined hierarchy. This logic holds true when determining whether any additional money will be added to an asset or sub-asset class).*

##### 1. Short-Term Exposure

###### a. Active

1. If client has Short-Term Corporate or alternate Vanguard fund, add to Vanguard Short-Term Corporate Bond fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
2. If client does not have any Vanguard short-term active bond exposure, open a new Vanguard Short-Term Corporate Bond fund, and add to it to the extent that proposed equals target.

###### b. Passive

1. If client has Short-Term Bond Index or alternate Vanguard fund, add to Vanguard Short-Term Bond Index fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
2. If client does not have any Vanguard short-term passive bond exposure, open a new Vanguard Short-Term Bond Index fund, and add to it to the extent that proposed equals target.

##### 2. Intermediate-Term Exposure

###### a. Active

1. If client has Intermediate-Term Corporate or alternate Vanguard fund, add to Vanguard Intermediate-Term Corporate Bond fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
2. If client does not have any Vanguard intermediate-term active bond exposure, open a new Vanguard Intermediate-Term Corporate fund, and add to it to the extent that proposed equals target.

b. Passive

1. If client has Intermediate-Term Bond Index or alternate Vanguard fund, add to Vanguard Intermediate-Term Bond Index fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
2. If client does not have any Vanguard intermediate-term passive bond exposure, open a new Vanguard Intermediate-Term Bond Index fund, and add to it to the extent that proposed equals target.

3. High-Yield Exposure

- a. If client has High-Yield Corporate or alternate Vanguard fund, add to Vanguard High-Yield Corporate Bond fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard high-yield bond exposure, open a new Vanguard High-Yield Corporate Bond fund, and add to it to the extent that proposed equals target.

4. Long-Term Exposure

- a. If client has Long-Term Bond Index or alternate Vanguard fund, add to Vanguard Long-Term Bond Index fund to the extent that proposed equals target (only add to alternate fund if client does not own “preferred fund” in this registration).
- b. If client does not have any Vanguard long-term bond exposure, open a new Vanguard Long-Term Bond Index fund, and add to it to the extent that proposed equals target.



## **COMBINATIONS**

The following are the various combinations that will be used depending upon the preferred domain rules. When making purchases, on a per registration basis, the registration with the highest dollar amount will be used first.

- A. Bonds Outside First (when there *is not enough* money to fully fund the bond exposure using all taxable dollars)  
*The following order should be used:*
  - Bonds Outside Hierarchy (based on tax bracket)
  - Bonds Inside Hierarchy
  - Stocks Inside Hierarchy
- B. Bonds Outside First (when there *is enough* money to fully fund the bond exposure using all taxable dollars)  
*The following order should be used:*
  - Bonds Outside Hierarchy (based on tax bracket)
  - Stocks Outside Hierarchy
  - Stocks Inside Hierarchy
- C. Stocks Outside First (when there *is not enough* money to fully fund the stock exposure using all taxable dollars)  
*The following order should be used:*
  - Stocks Outside Hierarchy
  - Stocks Inside Hierarchy
  - Bonds Inside Hierarchy
- D. Bonds Outside First (when there *is enough* money to fully fund the stock exposure using all taxable dollars)  
*The following order should be used:*
  - Stocks Outside Hierarchy
  - Bonds Outside Hierarchy (based on tax bracket)
  - Bonds Inside Hierarchy

**TEXT**

Before each set of steps, a heading that reads “Exchanges Within Your Joint Accounts” (or that registration title) will be inserted. Each Registration will, ultimately, have up to four steps. However, if any of the above steps are not used, the step numbers will adjust to be sequential.

Each step will have its own Tax Impact followed by its own Transaction Fees. Since Vanguard and non-Vanguard redemptions, and Vanguard purchases, will each have their own step, we will not have to be concerned with combining tax and fee notes.

### **VANGUARD ASSETS**

Step 1 - Exchange \$25,000 from your joint Vanguard Windsor II Fund and \$25,000, or all remaining shares, from your Vanguard U.S. Growth Fund to a new or your existing Vanguard Money Market Prime Portfolio.

Step 2 - Exchange \$50,000, or all shares, from your Vanguard Money Market Prime Portfolio to the following Vanguard Funds:

- \$ amount to fund
- \$ amount to fund
- \* add, or all remaining shares, to text in last purchase, if a full redemption.

### **NON-VANGUARD REPOSITIONABLE ASSETS**

Step 1 - Liquidate the following assets: list funds to be sold and dollar value, where appropriate add “or all shares”. Invest the proceeds in a new or your existing Vanguard Money Market Prime Portfolio.

Step 2 - Exchange \$50,000, or all shares, from your Vanguard Money Market Prime Portfolio to the following Vanguard Funds:

- \$ amount to fund
- \$ amount to fund
- \* add, or all remaining shares, to text in last purchase, if a full redemption.

### **NON-VANGUARD “POSSIBLY” REPOSITIONABLE ASSETS**

*This language will be used by counselors when “possibly” repositionable assets are sold. When the “possibly” repositionable functionality is added to auto-rebal, this text will be inserted automatically.*

Step 1 - In order to reach your target asset allocation, liquidate the following assets: list funds to be sold and dollar value, where appropriate add “or all shares”. Invest the proceeds in a new or your existing Vanguard Money Market Prime Portfolio.

Step 2 - Exchange \$50,000, or all shares, from your Vanguard Money Market Prime Portfolio to the following Vanguard Funds:

- \$ amount to fund
- \$ amount to fund
- \* add, or all remaining shares, to text in last purchase.

Note: On a per registration basis, all sales will be made first. The following hierarchy will be used for each registration:

- Step 1. Exchanges of Vanguard funds.
- Step 2. Exchanges of repositionable non-Vanguard funds.
- Step 3. Exchanges of “possibly” repositionable non-Vanguard funds.\*
- Step 4. Purchases of Vanguard funds.

*\* Step 3 will be separated out by the counselor for the time being.*

## TAX COST

Tax Cost information will flow into the report based on the data entered into PlanIT by the counselor. If the fund is a money market, the tax cost will be none. If redeeming a money market is part of several redemptions, that fund will not be part of the tax cost table. For funds where tax cost is not provided (non-Vanguard funds) or is unavailable (Vanguard funds) the counselor will enter a zero under cost basis in PlanIT. If one of these funds is sold, the average cost not available language will flow in for Vanguard and/or non-Vanguard funds.

### Vanguard Tax Cost Available

Tax Impact: The following is a summary of the potential tax consequences associated with the above recommendation. We use the average cost (single category) method to compute gains and losses on liquidations. Your actual gain or loss may vary.

<u>Fund<sup>1</sup></u>	<u>Redemption Cost Basis<sup>2</sup></u>	<u>Redemption Proceeds<sup>3</sup></u>	<u>Gain/Loss<sup>4</sup></u>
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1 = Fund sold.

2 = Shares sold multiplied by average cost per share. If total redemption, it equals total cost.

3 = Shares sold multiplied by current price per share. If total redemption, it equals total value.

4 = Redemption Proceeds minus Redemption Cost Basis. Negative numbers have brackets, i.e. (\$200)

### Non-Vanguard Tax Cost Available

Tax Impact: The following is a summary of the potential tax consequences associated with the above recommendation. The potential gains or losses are based on the information that you provided.

<u>Fund<sup>1</sup></u>	<u>Redemption Cost Basis<sup>2</sup></u>	<u>Redemption Proceeds<sup>3</sup></u>	<u>Gain/Loss<sup>4</sup></u>
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1 = Fund sold.

2 = Shares sold multiplied by average cost per share. If total redemption, it equals total cost.

3 = Shares sold multiplied by current price per share. If total redemption, it equals total value.

4 = Redemption Proceeds minus Redemption Cost Basis. Negative numbers have brackets, i.e. (\$200)

### Vanguard Tax Cost not Available

Tax Impact: Average cost information on the above account(s) is pending and will be discussed prior to implementation.

Non-Vanguard Tax Cost not Available

Tax Impact: The above recommendation was made without regard to cost basis. Please consider the tax ramifications of this transaction before implementing the above recommendation.

Some Vanguard Tax Cost Available

Tax Impact: Average cost information on the following accounts is pending: list funds with “zero” cost basis, and will be discussed prior to implementation. The following is a summary of the potential tax consequences associated with selling the remaining funds. We use the average cost (single category) method to compute gains and losses on liquidations. Your actual gain/loss may vary.

<u>Fund</u> <sup>1</sup>	<u>Redemption Cost Basis</u> <sup>2</sup>	<u>Redemption Proceeds</u> <sup>3</sup>	<u>Gain/Loss</u> <sup>4</sup>
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1 = Fund sold.

2 = Shares sold multiplied by average cost per share. If total redemption, it equals total cost.

3 = Shares sold multiplied by current price per share. If total redemption, it equals total value.

4 = Redemption Proceeds minus Redemption Cost Basis. Negative numbers have brackets, i.e. (\$200)

Some Non-Vanguard Tax Cost Available

Tax Impact: The above recommendation considered cost basis where provided. The following represents your potential gains or losses for funds where cost basis was provided.

## **TRANSACTION FEES**

### **Vanguard**

Transaction Fees (New Funds): Please refer to “Your Fund Recommendations” section and prospectus for any applicable transaction fees associated with investing in . . . (the funds with possible or definite purchase or redemption fees will be listed based on the buy/sell recommendations).

Transaction Fees (Existing Funds): Please refer to your fund prospectus for any applicable transaction fees associated with investing in . . . (the funds with possible or definite purchase or redemption fees will be listed based on the buy/sell recommendations).

OR

Transaction Fees: None.

### **Non-Vanguard**

Transaction Fees: Please consult with the above providers for any fees associated with this transaction.

## **DOLLAR-COST AVERAGING**

The dollar amount to dollar-cost average will equal the proposed stock amount minus the current stock amount. We will only recommend dollar-cost-averaging when the proposed stock percentage increases by 10% or more over the current stock percentage. That dollar amount will be dollar-cost averaged over one year. The language is as follows: (\$1/5<sup>th</sup> amount initially, and \$1/5<sup>th</sup> amount every three months over the course of a year, for a total of five exchanges). The second 1/5<sup>th</sup> amount will be rounded to the nearest \$100 and the first adjusted accordingly. The system will dollar-cost average into stock funds until it reaches the total needed, adding the above text next to each fund it DCA's into.

**VANGUARD FUND CHOICES (Core Portfolio)**

**I. Stocks**

**A. Large U.S. Stocks**

1. Market/Index
  - a. Preferred - 500 Portfolio
  - b. Alternate - Quantitative, Trustees' Equity and Tax-Managed Growth & Income
2. Growth
  - a. Preferred - U.S. Growth
  - b. Alternate - Morgan Growth and Index Growth
3. Value
  - a. Preferred - Windsor II
  - b. Alternate - Windsor, Equity Income and Index Value

**B. U.S. Total Stock Market (to be used when large market/index to mid/small market/index equals 70/30)**

1. Preferred - Total Stock Market
2. Alternate - Tax-Managed Capital Appreciation

**C. Mid/Small U.S. Stocks**

1. Market/Index
  - a. Preferred - Extended Market
  - b. Alternate - Index Small Cap
2. Mid Cap Active
  - a. Preferred - Horizon - Aggressive Growth
  - b. Alternate - Primecap, Selected Value, Horizon - Capital Opportunity and REIT Index
3. Small Cap Active
  - a. Preferred - Explorer
  - b. Alternate - None

**D. International Stocks**

1. Developed
  - a. Preferred - European (50%) and Pacific (50%)
  - b. Alternate - International Growth and Trustees' International
2. Emerging
  - a. Preferred - Emerging Markets Index
  - b. Alternate - None
3. Total International (to be used when there is an 80/20 ratio between developed and emerging)
  - a. Preferred - Total International
  - b. Alternate - None



II. Bonds

A. High Yield

1. Municipal
  - a. Preferred - High Yield Muni
  - b. Alternate - None
2. Corporate
  - a. Preferred - High Yield Corporate
  - b. Alternate - None

B. Long-Term

1. Municipal
  - a. Preferred - Insured Long-Term Muni or State specific Muni
  - b. Alternate - Long-Term Muni
2. Taxable
  - a. Preferred - Long-Term Bond Index
  - b. Alternate - Long-Term Corporate, Admiral Long-Term U.S. Treasury and Long-Term U.S. Treasury

C. Intermediate-Term

1. Municipal
  - a. Preferred - Intermediate-Term Muni or State specific Muni
  - b. Alternate - None
2. Active
  - a. Preferred - Intermediate-Term Corporate
  - b. Alternate - Admiral Intermediate-Term U.S. Treasury, Intermediate-Term U.S. Treasury
3. Passive
  - a. Preferred - Intermediate-Term Bond Index
  - b. Alternate - Total Bond Market Index

D. Short-Term

1. Municipal
  - a. Preferred - Short-Term Muni (Portfolio 1) and Limited-Term and Muni (Portfolio 2 - 7)
  - b. Alternate - Limited-Term Muni (Portfolio 1) and Short-Term Muni (Portfolio 2 - 7)
2. Active
  - a. Preferred - Short-Term Corporate
  - b. Alternate - Short-Term Admiral U.S. Treasury, Short-Term U.S. Treasury
3. Passive
  - a. Preferred - Short-Term Bond Index
  - b. Alternate - None

**VANGUARD FUND CHOICES (Tax-Efficient Portfolio)**

**I. Stocks**

- A. U.S. Total Stock Market (to be used when large market/index to mid/small market/index equals 70/30)
  - 1. Preferred - Total Stock Market (50%) and Tax-Managed Capital Appreciation (50%)
  - 2. Alternate - None
- B. Large U.S. Stocks
  - 1. Market/Index
    - a. Preferred - None, only use alternate when Total Stock Market and Capital Appreciation cannot be used
    - b. Alternate - Tax-Managed Growth & Income (50%) and 500 Portfolio (50%)
- C. Mid/Small U.S. Stocks
  - 1. Market/Index
    - a. Preferred - None, only use alternate when Total Stock Market and Capital Appreciation cannot be used
    - b. Alternate - Extended Market (50%) and Small Cap (50%)
- D. International Stocks
  - 1. Developed
    - a. Preferred - Pacific (50%) and Europe (50%)
    - b. Alternate - None
  - 2. Emerging
    - a. Preferred - Emerging Markets Index
    - b. Alternate - None
  - 3. Total International (to be used when there is an 80/20 ratio between developed and emerging)
    - a. Preferred - Total International
    - b. Alternate - None

II. Bonds

A. High Yield

1. Municipal
  - a. Preferred - High Yield Muni
  - b. Alternate - None
2. Corporate
  - a. Preferred - High Yield Corporate
  - b. Alternate - None

B. Long-Term

1. Municipal
  - a. Preferred - Insured Long-Term Muni or State specific Muni
  - b. Alternate - Long-Term Muni
2. Taxable
  - a. Preferred - Long-Term Bond Index
  - b. Alternate - Long-Term Corporate, Admiral Long-Term U.S. Treasury and Long-Term U.S. Treasury

C. Intermediate-Term

1. Municipal
  - a. Preferred - Intermediate-Term Muni or State specific Muni
  - b. Alternate - None
2. Active
  - a. Preferred - Intermediate-Term Corporate
  - b. Alternate - Admiral Intermediate-Term U.S. Treasury, Intermediate-Term U.S. Treasury
3. Passive
  - a. Preferred - Intermediate-Term Bond Index
  - b. Alternate - Total Bond Market Index

D. Short-Term

1. Municipal
  - a. Preferred - Short-Term Muni (Portfolio 1) and Limited-Term and Muni (Portfolio 2 - 7)
  - b. Alternate - Limited-Term Muni (Portfolio 1) and Short-Term Muni (Portfolio 2 - 7)
2. Active
  - a. Preferred - Short-Term Corporate
  - b. Alternate - Short-Term Admiral U.S. Treasury, Short-Term U.S. Treasury
3. Passive
  - a. Preferred - Short-Term Bond Index
  - b. Alternate - None

**VANGUARD FUND CHOICES (Income Portfolio)****I. Stocks****A. Large U.S. Stocks**

1. Market/Index
  - a. Preferred - 500 Portfolio
  - b. Alternate - Quantitative, Trustees' Equity and Tax-Managed Growth & Income
2. Growth
  - a. Preferred - None
  - b. Alternate - None
3. Value
  - a. Preferred - Windsor II (50%) and Equity Income (50%)
  - b. Alternate - Windsor and Index Value

**B. U.S. Total Stock Market (to be used when large market/index to mid/small market/index equals 70/30)**

1. Preferred - Total Stock Market
2. Alternate - Tax-Managed Capital Appreciation

**C. Mid/Small U.S. Stocks**

1. Market/Index
  - a. Preferred - Extended Market
  - b. Alternate - Index Small Cap
2. Mid/Small Active
  - a. Preferred - REIT Index
  - b. Alternate - Primecap, Selected Value, Horizon - Capital Opportunity and Explorer

**D. International Stocks**

1. Developed
  - a. Preferred - European (50%) and Pacific (50%)
  - b. Alternate - International Growth and Trustees' International
2. Emerging
  - a. Preferred - Emerging Markets Index
  - b. Alternate - None
3. Total International (to be used when there is an 80/20 ratio between developed and emerging)
  - a. Preferred - Total International
  - b. Alternate - None

II. Bonds

A. High Yield

1. Municipal
  - a. Preferred - High Yield Muni
  - b. Alternate - None
2. Corporate
  - a. Preferred - High Yield Corporate
  - b. Alternate - None

B. Long-Term

1. Municipal
  - a. Preferred - None
  - b. Alternate - None
2. Taxable
  - a. Preferred - Long-Term Corporate
  - b. Alternate - None

C. Intermediate-Term

1. Municipal
  - a. Preferred - Intermediate-Term Muni or State specific Muni
  - b. Alternate - None
2. Active
  - a. Preferred - Intermediate-Term Corporate
  - b. Alternate - None
3. Passive
  - a. Preferred - None
  - b. Alternate - None

D. Short-Term

1. Municipal
  - a. Preferred - Short-Term Muni and Limited-Term and Muni (Portfolio 1 and 2)
  - b. Alternate - None
2. Active
  - a. Preferred - Short-Term Corporate
  - b. Alternate - None
3. Passive
  - a. Preferred - None
  - b. Alternate - None

**VANGUARD FUND CHOICES (Annuity)**

**I. Stocks**

**A. Large U.S. Stocks**

1. Market/Index
  - a. Preferred - Equity Index
  - b. Alternate - None
2. Growth
  - a. Preferred - Growth Portfolio
  - b. Alternate - None
3. Value
  - a. Preferred - Equity Income
  - b. Alternate - None

**B. Mid/Small U.S. Stocks**

1. Small Cap Active
  - a. Preferred - Small Company Growth
  - b. Alternate - None

**D. International Stocks**

1. Developed
  - a. Preferred - International
  - b. Alternate - None

**II. Bonds**

**A. High Yield**

1. Corporate
  - a. Preferred - High Yield Bond
  - b. Alternate - None

**B. Intermediate-Term**

1. Passive
  - a. Preferred - High Grade Bond Index
  - b. Alternate - None

**PORTFOLIO ALLOCATIONS**

<b>PORTFOLIO</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>BONDS</b>	<b>80%</b>	<b>75%</b>	<b>65%</b>	<b>50%</b>	<b>35%</b>	<b>20%</b>	<b>0%</b>
High Yield*	0%	0%	10%	10%	5%	0%	0%
Long-Term*	0%	0%	7%	5%	5%	0%	0%
Intermediate-Term Index	0%	8%	10%	8%	0%	4%	0%
Intermediate-Term Active	8%	18%	15%	9%	11%	11%	0%
Short-Term Index	24%	15%	10%	8%	7%	4%	0%
Short-Term Active	48%	34%	13%	10%	7%	1%	0%
<b>STOCKS</b>	<b>10%</b>	<b>20%</b>	<b>35%</b>	<b>50%</b>	<b>65%</b>	<b>80%</b>	<b>100%</b>
Large Market/Index	7%	14%	12%	16%	20%	22%	28%
Large Growth	0%	0%	6%	8%	10%	11%	14%
Large Value	0%	0%	6%	8%	11%	12%	14%
Mid/Small Market/Index	3%	6%	6%	6%	8%	10%	12%
Mid Active	0%	0%	2%	3%	4%	4%	6%
Small Active	0%	0%	3%	4%	5%	5%	6%
International-Developed	0%	0%	0%	4%	6%	13%	16%
International-Emerging	0%	0%	0%	1%	1%	3%	4%

\* When using Municipal Bonds for portfolios 3 and 4, percentages are flipped for long-term and high-yield bonds. For portfolio 5 use 4% high-yield and 6% long-term municipal bond.

## **CONCLUSION**

This document will provide the foundation for auto-rebal. By first having the repositionable and non-repositionable functionality, we should automate at least 70% of the investment planning analyses. Once this is developed, we will be able to enhance the auto-rebal product to handle a larger percentage of clients. The following are recommended developmental steps for auto-rebal:

- Stage 1: Develop the foundation for auto-rebal by creating the repositionable functionality in conjunction with the preferred domain logic and automated text.
- Stage 2: Add possibly repositionable functionality that is based on a tax and fee cost analysis.
- Stage 3: Give the system (or counselor) the flexibility to choose an income tilt or tax-efficient portfolio.
- Stage 4: Allow the counselor to pick the hierarchy of constraints (prioritize them) in the GUI.



## APPENDIX A: SELLING POSSIBLY REPOSITIONABLE ASSETS

Once we have the functionality to add “possibly repositionable” assets to PlanIt, we will need a decision-making hierarchy to determine when, if at all, assets will be sold. There are two factors that will influence this decision: how close the client’s strategic asset allocation (SAA) is to the target, without any further sales, and the tax cost associated with selling additional assets.

### *Step 1: Compare SAAs*

If the client’s SAA is within three percentage points (+/- 3%) of the target, after selling all “repositionable” assets, **do not** consider selling any “possibly repositionable” assets. If the client’s SAA is **not** within three percentage points (+/- 3%) of the target, after selling all “repositionable assets”, consider the *tax cost* of selling any “possibly repositionable” assets.

Rationale: Having a portfolio that is within 3 percent of the target should give a client a proposed portfolio with similar risk/return characteristics to the target portfolio. A portfolio 3% or less off target will behave similarly to the ideal target, but would have to be re-balanced in the future.

### *Step 2: Consider the tax cost*

In order to get the client’s SAA within three percentage points of the target, sell “possibly repositionable” assets until the tax cost equals five percent of the value of the portfolio. (The tax cost equals the market value minus the cost basis times 20% or 10%.) Liquidations will be made until the earlier of: (1) the proposed SAA is within three percent of the target or (2) the tax cost (including the cost of previous moves) equals five percent of the portfolio. Assets with the least tax cost will be sold first.

Note: It is possible that selling “repositionable” assets will result in a tax cost greater than five percent. If this is the case, no “possibly repositionable” assets will be sold.

Rationale (five percent rule): If the overall tax cost from the sale of securities is no greater than 5% of the portfolio (in aggregate), sales are made until the tax obligation equals 5% of the overall portfolio. Priority of sale is based on (a) tax consequence, lowest to highest (within each over-weighted asset or sub-asset class. The five percent threshold came from the fact that, in most of our allocations, the client would still have a positive real after-tax return, or the client’s real wealth would not decline in most cases.

Rationale (20% and 10% tax rate): Using a 20% tax rate (or 10% for taxpayers in the 15% MTB) will be an accurate way to estimate a client’s tax liability. It will **understate** their tax cost when they have a short-term holding period and their MTB is greater than 15%. (The likelihood of this is mitigated by the fact that assets greatly appreciating over a period less than twelve months, in many cases, will be non-repositionable.)

**APPENDIX B: MOCK-UP OF SYSTEM OUTPUT**

After auto-rebal has produced a report, we will need a summary of its conclusions. This will allow the counselor and reviewer to get an overview of the client's situation. The following is a prototype of the document and its contents:

**SAA Summary:**

*The client reached the target SAA and the sub-SAA, or*  
*The client reached the target SAA but was off in the following sub-categories (list the sub-asset categories where proposed does not equal target), or*  
*The client **did not** reach the target SAA and was off in the following sub-categories (list the asset and sub-asset categories where proposed does not equal target).*

**Indexing Summary:**

*Stock Indexing:*

*Current = \_\_%*  
*Proposed = \_\_%*  
*Target = \_\_%*

*Stock Active:*

*Current = \_\_%*  
*Proposed = \_\_%*  
*Target = \_\_%*

**Growth vs. Value Summary:**

*Growth Stocks:*

*Current = \_\_%*  
*Proposed = \_\_%*  
*Target = \_\_%*

*Value Stocks:*

*Current = \_\_%*  
*Proposed = \_\_%*  
*Target = \_\_%*

**Tax Cost Summary:**

*Total Tax Cost = \$\_\_*

*Tax Cost as a percent of portfolio = \_\_%*

**Transaction Summary:**

*Total Number of Steps = \_\_*

*Total Number of Transactions = \_\_*

**Fund Summary:**

*Preferred Funds:*

*The following preferred funds were not used: (list funds)*

*Alternate Funds:*

*The following alternate funds were used: (list funds)*

**Income Summary:**

*Client Income Need = \$\_\_*

*Taxable Bond Funds Generate = \$\_\_*

*Surplus or Deficit = \$\_\_*

**Preferred Domain Summary:**

*Client is an income investor or an accumulation investor or in the 39.6% MTB*

*Stocks or Bonds should be outside*

*Taxable Accounts:*

*Stocks = \_\_%*

*Bonds = \_\_%*

*Cash Reserves = \_\_%*

*Tax-Deferred Accounts:*

*Stocks = \_\_%*

*Bonds = \_\_%*

*Cash Reserves = \_\_%*

**Dollar-Cost Averaging Summary:**

*DCA amount (proposed) = \_\_ % and \$\_\_*

*DCA amount (target) = \_\_ % and \$\_\_*